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### Diseases and Conditions

#### **Leukoplakia**

From MayoClinic.com  
Special to CNN.com

**Leukoplakia** is a condition in which thickened, white patches form on your gums, on the inside of your cheeks and sometimes on your tongue — usually as a result of chronic irritation. Tobacco, either smoked or chewed, is the main culprit, but irritation can also come from ill-fitting dentures and long-term alcohol use.

Although anyone can develop **leukoplakia**, it's most common in older men. People with compromised immune systems sometimes develop an unusual form of the disorder called hairy **leukoplakia**.

In general, **leukoplakia** isn't painful, but the patches may be sensitive when you touch them or eat spicy foods. And though the disorder usually isn't dangerous, it can be serious. About 5 percent of leukoplakic patches show early signs of cancer, and a large percentage of cancers of the mouth (oral cancers) occur next to areas of **leukoplakia**. For that reason, it's best to see your dentist if you have unusual changes in your mouth lasting longer than a week.

#### Oral cancer

#### Cancer

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### Signs and symptoms

**Leukoplakia** first appears as flat, gray sores — usually on your gums or on the insides of your cheeks and sometimes on your tongue. Over weeks or months, leukoplakic sores develop into patches with the following characteristics:

- White color
- Thick, rough texture
- Hardened surface

**Leukoplakia** appears as thick, white patches on your gums or on the insides of your cheeks....

Sometimes you may also have raised red lesions (erythroplakia), which are more likely to show pre-cancerous changes.

A type of **leukoplakia** called hairy **leukoplakia** primarily affects people whose immune systems have been weakened by medications or disease, especially HIV or AIDS. Hairy **leukoplakia** causes fuzzy, white patches that resemble folds or ridges on the sides of the tongue. It's often mistaken for oral thrush — an infection marked by creamy white patches on your pharynx and the insides of your cheeks.

### HIV/AIDS

### Oral thrush

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### **Causes**

Most often, **leukoplakia** results from chronic irritation of your mouth's delicate tissues. The irritation may come from a number of sources, including poorly-fitting dentures, rough spots on your teeth or fillings, and long-term alcohol use.

But tobacco use is responsible for most cases of **leukoplakia**. The vast majority of people who develop **leukoplakia** are smokers, and most leukoplakic patches either improve or disappear within a year after stopping smoking. Chewing tobacco and snuff also play a key role — as many as 95 percent of regular users of "smokeless tobacco" products eventually develop **leukoplakia**.

In addition, researchers have identified both *Candida albicans* — the fungus that causes oral thrush — and human papillomavirus, which causes genital warts, in leukoplakic patches. But it's not known whether these microorganisms occur as a secondary infection or actually cause **leukoplakia**.

#### ***Hairy leukoplakia***

Hairy **leukoplakia** results from infection with the Epstein-Barr virus (EVB). Most people are initially exposed to EVB in childhood — often without having any symptoms, although EVB can be associated with a number of diseases, including mononucleosis and several types of cancer.

Once you've been infected with EBV, the virus remains in your body for life. Normally the virus is dormant. But if your immune system is weakened, either from disease or certain medications, the virus can become reactivated, leading to conditions such as hairy **leukoplakia**.

People with HIV infection or AIDS are especially likely to develop hairy **leukoplakia**. Although the use of antiretroviral drugs has reduced the number of cases, hairy **leukoplakia** still may affect as many as 25 percent of HIV-positive people, and may be one of the first signs of HIV infection.

### Spit tobacco: Does smokeless mean harmless?

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### **Risk factors**

Tobacco use puts you at high risk of developing both **leuk plakia** and oral cancer. Drinking alcohol in conjunction with smoking further increases your risk. In fact, **luk plakia** occurs more often in men than in women primarily because men are more likely to both drink alcohol and smoke.

In recent years, however, as more women have started smoking, the rate of **leuk plakia** in women has increased. Women who develop **leukoplakia** are more likely to experience cancerous changes in their mouth tissues than men are.

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### When to seek medical advice

Sometimes mouth sores can be annoying or painful without being harmful. But in other cases, mouth problems can indicate a more serious condition. For that reason, see your dentist if you have any of the following:

- Sores inside your mouth that haven't healed within a week
- Lumps or white, red or dark patches in your mouth
- Persistent changes in the tissues of your mouth

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### Screening and diagnosis

Most often, your dentist diagnoses **leukoplakia** by examining the patches in your mouth and ruling out other possible causes for your symptoms.

To help ensure that no early signs of cancer exist, your dentist may perform an oral brush biopsy — removing some cells from the leukoplakic patches with a small brush. The test takes just minutes and requires no anesthesia. The scrapings are then analyzed in a laboratory using a highly specialized imaging system that allows a pathologist to detect a single abnormal cell among hundreds of thousands of healthy cells.

A negative report means no abnormal cells are present. If the report is positive, your dentist is likely to perform another biopsy by removing a small tissue sample with a scalpel. The sample is then sent to a laboratory for analysis.

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### Complications

**Leukoplakia** usually doesn't cause permanent damage to tissues in your mouth and frequently goes away once you remove the irritating factors. Some sores may become infected, however, or cause ongoing discomfort.

Oral cancer is the most serious complication of **leukoplakia**. A majority of oral cancers form in the vicinity of leukoplakic patches, and the patches themselves may show cancerous changes.

Hairy **leukoplakia**, on the other hand, isn't painful and isn't likely to lead to cancer. But it may indicate the presence of HIV infection or AIDS.

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### Treatment

The usual treatment of **leuk plakia** is removing the source of irritation. For most people, stopping smoking or correcting dental problems clears the condition. When this isn't effective or if the lesions show early signs of cancer, your dentist may choose to remove leukoplakic patches using a scalpel, laser or cryoprobe — an extremely cold probe that freezes and destroys cancer cells.

Researchers are investigating the effects of retinoids — derivatives of vitamin A that are used to treat severe acne and other skin conditions — on **leukoplakia**. Although retinoids appear effective against **leukoplakia**, they can cause serious side effects. **Beta-carotene**, an antioxidant that's converted to vitamin A in your body, may also completely or partially reduce leukoplakic patches.

#### **Treating hairy leukoplakia**

Not all cases of hairy **leukoplakia** require treatment, and your doctor or dentist may take a wait-and-see approach. If you need treatment, several options are available:

- **Systemic medications.** These include antiviral drugs such as valacyclovir (Valtrex) and famciclovir (Famvir), which prevent EBV from replicating, but don't eliminate it from your body. Treatment with antivirals can clear leukoplakic patches within a week or two, but symptoms often return once therapy stops.
- **Topical medications.** These include podophyllum resin solution and tretinoin (retinoic acid). Podophyllum resin solution is a mixture obtained from the dried rhizomes and roots of two common plants. When applied topically, it can heal leukoplakic patches, but it may cause some discomfort and affect your sense of taste. In addition, the patches often return several weeks after treatment. Retinoic acid, a vitamin-A derivative, seems to inhibit the replication of EBV, but as with other treatments, hairy **leukoplakia** often returns when the treatment ends.

#### Vitamin A (retinol)

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#### **Prevention**

Most often, you can prevent **leukoplakia** by following these suggestions:

- **Stop using tobacco products.** Avoiding all tobacco products is one of the best steps you can take for your overall health as well as one of the main ways to prevent **leukoplakia**. Talk to your doctor about methods that can help you quit.
- **Avoid or limit alcohol consumption.** Alcohol is a factor in both **leukoplakia** and oral cancer. Combining alcohol and smoking greatly increases your risk of both diseases because alcohol makes it easier for the harmful chemicals in tobacco to penetrate the tissues in your mouth.
- **Get needed dental treatment.** See your dentist regularly. He or she can smooth rough edges on your teeth and remake or realign ill-fitting dentures.
- **Eat plenty of fresh fruits and vegetables.** These are rich in antioxidants such as **beta-carotene**, which reduce the risk of **leukoplakia** by deactivating harmful oxygen molecules before they can damage tissues. Rich food sources of **beta-carotene** include dark yellow, orange and green fruits and vegetables, including carrots, pumpkin, squash, cantaloupe and spinach.

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#### Beta carotene

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